

What Is Claimed Is:

1 1. A transflective liquid crystal display device having
2 various cell gaps, comprising:
3 a first substrate having a transmissive region and a
4 reflective region thereon;
5 an array of pixel driving elements formed on the first
6 substrate in the reflective region;
7 an insulating layer formed on the first substrate to cover
8 the array of pixel driving elements;
9 a passivation layer formed on the insulating layer in the
10 reflective region, wherein a top surface of the
11 passivation layer is higher than a top surface of
12 the insulating layer;
13 a conformal reflective electrode formed on the
14 passivation layer, wherein the reflective electrode
15 electrically connects the array of pixel driving
16 elements;
17 a conformal transparent electrode formed on the
18 insulating layer, wherein the transparent electrode
19 electrically connects the array of pixel driving
20 elements;
21 a color filter layer formed on the reflective electrode
22 and the transparent electrode, wherein a first
23 thickness of the color filter layer in the
24 reflective region is smaller than a second thickness
25 of the color filter layer in the transmissive
26 region;
27 a second substrate opposite the first substrate;

28 a common electrode formed on an inner side of the second
29 substrate;
30 a liquid crystal layer interposed between the first
31 substrate and the second substrate; and
32 a transparent organic element bridging a gap in the liquid
33 crystal layer between the first substrate and the
34 second substrate, formed on the common electrode in
35 the reflective region, wherein one end of the
36 transparent organic element shores up the color
37 filter layer, thus a third thickness of the gap in
38 the reflective region is smaller than a fourth
39 thickness of the gap in the transmissive region.

1 2. The transflective LCD device according to claim 1,
2 wherein the array of the pixel driving elements is an array of
3 thin film transistors (TFTs).

1 3. The transflective LCD device according to claim 1,
2 wherein the transparent electrode is an ITO (indium tin oxide)
3 layer or an IZO (indium zinc oxide) layer.

1 4. The transflective LCD device according to claim 1,
2 wherein the reflective electrode is an aluminum layer or a
3 silver layer.

1 5. The transflective LCD device according to claim 1,
2 wherein the common electrode is an ITO (indium tin oxide) layer
3 or an IZO (indium zinc oxide) layer.

1 6. The transflective LCD device according to claim 1,
2 wherein the transparent organic element has an angular shape.

1 7. A method of fabricating a transflective liquid
2 crystal display device having various cell gaps, comprising the
3 steps of:

4 providing a first substrate having a transmissive region
5 and a reflective region thereon;

6 forming an array of pixel driving elements on the first
7 substrate in the reflective region;

8 forming an insulating layer on the first substrate to
9 cover the array of pixel driving elements;

10 forming a conformal transparent electrode on the
11 insulating layer, wherein the transparent electrode
12 electrically connects the array of pixel driving
13 elements;

14 forming a passivation layer on the insulating layer in the
15 reflective region, wherein a top surface of the
16 passivation layer is higher than a top surface of
17 the insulating layer;

18 forming a conformal reflective electrode on the
19 passivation layer, wherein the reflective electrode
20 electrically connects the array of pixel driving
21 elements;

22 forming a color filter layer on the reflective electrode
23 and the transparent electrode, wherein a first
24 thickness of the color filter layer in the
25 reflective region is smaller than a second thickness
26 of the color filter layer in the transmissive
27 region;

28 providing a second substrate opposite the first
29 substrate;

30 forming a common electrode on an inner side of the second
31 substrate;
32 forming a transparent organic element on the common
33 electrode in the reflective region for bridging a
34 gap in a liquid crystal layer between the first
35 substrate and the second substrate, wherein one end
36 of the transparent organic element shores up the
37 color filter layer, thus a third thickness of the
38 gap in the reflective region is smaller than a fourth
39 thickness of the gap in the transmissive region; and
40 filling a space between the first substrate and the second
41 substrate with liquid crystal molecules to form the
42 liquid crystal layer.

1 8. The method according to claim 7, wherein the array
2 of the pixel driving elements is an array of thin film
3 transistors (TFTs).

1 9. The method according to claim 7, wherein the
2 transparent electrode is an ITO (indium tin oxide) layer or an
3 IZO (indium zinc oxide) layer.

1 10. The method according to claim 7, wherein the
2 reflective electrode is an aluminum layer or a silver layer.

1 11. The method according to claim 7, wherein the common
2 electrode is an ITO (indium tin oxide) layer or an IZO (indium
3 zinc oxide) layer.

1 12. The method according to claim 7, wherein the
2 transparent organic element has an angular shape.